

REMARKS

In view of the above amendments and following remarks, reconsideration and further examination are requested.

The specification and abstract have been reviewed and revised to make editorial changes thereto and generally improve the form thereof, and a substitute specification and abstract are provided. No new matter has been added by the substitute specification and abstract. Also, enclosed is a "marked-up" copy of the original specification and abstract to show changes that have been incorporated into the substitute specification and abstract. The attached pages are captioned "Version With Markings To Show Changes Made."

The instant invention pertains to a portable terminal which is wearable on a forearm of a user. Such a portable terminal is generally known in the art; however, suffers from a drawback in that in order to view a display screen of the portable terminal it is necessary to manipulate the forearm of the wearer such that the display screen can be viewed by the wearer. Accordingly, if the user is using the hand attached to the forearm to perform an operation, the user must stop performing this operation in order to view the display screen.

Applicant has addressed and resolved this drawback by providing a unique portable terminal which is wearable on a forearm of a user, and which has a display screen which can be viewed by manipulating a display unit which includes the display screen, without manipulating the forearm on which the terminal is worn.

With reference to Figures 1-3 for example, the portable terminal comprises a display unit 2 including a display screen 3, a forearm mounting unit 7 for mounting the display unit on a forearm of a user, and a hinge case 6 that allows the display unit to be manipulated such that the display screen can be easily and readily viewed by a user. The hinge case 6 includes a first rotary mechanism for rotatably coupling the display unit 2 to the forearm mounting unit 7 such that the display unit is able to rotate relative to the forearm mounting unit about a first axis 6a, and also includes a second rotary mechanism for rotatably coupling the display unit to the forearm mounting unit such that the display unit is capable of rotating relative to the forearm mounting unit about a second axis 6b. The hinge case

6 functions as the first rotary mechanism and the second rotary mechanism. By having the hinge case 6 function as both the first rotary mechanism and the second rotary mechanism, a simple structure is provided.

The Examiner rejected claims 1-7 under 35 U.S.C. 103(a) as being unpatentable over Harrison in view of Moon. This rejection is respectfully traversed, and Harrison and Moon are not applicable with regard to the newly added claims for the following reasons.

Initially, it is respectfully submitted that there would have been no motivation or suggestion for one having ordinary skill in the art to have modified Harrison in view of Moon by having the display unit 177 of Harrison be rotatable about an axis in addition to the axis about which the display unit 177 is already rotatable.

In this regard, it is not disputed that Moon discloses a portable computer including a display unit 40 that is rotatably coupled relative to a base 20 so as to be rotatable relative to base 20 about two mutually perpendicular axes 21 and 23. However, in order to properly modify a primary reference there must be some motivation, either in the primary reference or a secondary reference, for allowing one having ordinary skill in the art to arrive at such a modification. It is respectfully submitted that such a motivation is lacking in the instant case.

In this regard, as expressed in column 1, lines 31-48 of Moon, a reason why the display unit 40 of Moon is made to be rotatable relative to the base 20 about two mutually perpendicular axes is to allow the user of the computer to show information disclosed on the display unit 40 to other people in an easy, safe and reliable manner.

In Harrison, the device thereof is for use by a single person for entering data into a data processing system. There is no need to make the display unit 177 rotatable about two mutually perpendicular axes since there would be no need to show others information that is being displayed on the unit 177. Accordingly, because the problem solved by Moon is not one that exists in Harrison, there would have been no motivation or suggestion for one having ordinary skill in the art to have modified Harrison in view of Moon as set forth

by the Examiner. Accordingly, for this reason alone claim 8 is allowable over a combination of Harrison and Moon.

Irrespective of the above, claim 8 has been amended to further distinguish the instant invention from the references relied upon by the Examiner. In this regard, claim 8 now recites

wherein said hinge case functions as said first rotary mechanism and said second rotary mechanism

As expressed previously, by having the hinge case function as both the first rotary mechanism and the second rotary mechanism, a simple structure is realized. Such a feature is not taught or suggested by Harrison or Moon, either taken alone or in combination.

In this regard, because Harrison does not disclose a first rotary mechanism and second rotary mechanism, Harrison does not disclose a hinge case that functions as both a first rotary mechanism and a second rotary mechanism. Additionally, the rotary mechanism of Moon is complicated in structure, and not of the simple kind as recited in claim 8. Accordingly, for this additional reason claim 8 is not rendered obvious over a combination of Harrison and Moon.

Thus, claims 8-28 are allowable over a combination of Harrison and Moon.

Additionally, dependent claim 15 is believed to be patentable in its own right by specifically reciting a direction in which the display unit rotates, which direction is not taught or suggested by either Harrison or Moon. In this regard, claim 15 recites that the display unit is to rotate relative to the forearm mounting unit in a direction that extends from a first open end of a forearm receiving portion to a second open end of the forearm receiving portion. This is shown with reference to Figures 1-3, where forearm fixing band or receiving portion 8 has first and second open ends, and the display unit 2 rotates in a direction from one of these ends toward the other of these ends. This feature is not taught or suggested by Harrison or Moon.

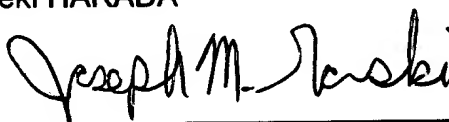
In this regard, in Harrison the display unit 177 rotates transverse to the open ends of the strap 178, and not from one open end of this strap towards another open end of this strap. Additionally, assuming arguendo that one having ordinary skill in the art would have been motivated to modify Harrison in view of Moon as proposed by the Examiner, then the display unit of the resulting combination would still not rotate as recited in claim 15. Accordingly, claim 15 is patentable in its own right.

In view of the above amendments and remarks, it is respectfully submitted that the present application is in condition for allowance and an early Notice of Allowance is earnestly solicited.

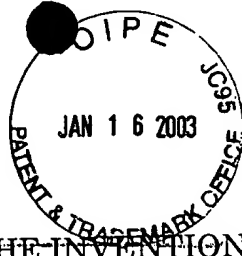
If after reviewing this Amendment, the Examiner believes that any issues remain which must be resolved before the application can be passed to issue, the Examiner is invited to contact the Applicant's undersigned representative by telephone to resolve such issues.

Respectfully submitted,

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~~TITLE OF THE INVENTION~~

Portable Terminal Wearable on Forearm

PORTABLE TERMINAL WEARABLE ON FOREARM

FIELD OF THE INVENTION

5 The present invention relates to a portable terminal wearable on
the forearm, such as a portable personal computer having a display unit

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BACKGROUND OF THE INVENTION

10 A conventional portable terminal wearable on a forearm, such as a
portable personal computer, is worn on a wrist or forearm of a user directly
via with a belt.

The conventional portable terminal wearable on the forearm will
be explained with ^{reference} referring to the drawings. Fig. 4 is a perspective outline
view of ^a the portable terminal wearable on ^a the forearm. A display unit 41
15 incorporates a liquid crystal display 42. At ^a the back side of a display
screen 42a of a case 43 of the display unit 41, a fixing band 44 for ^{being fixed} fixing
near the wrist of the forearm, and a holding member 45 through which the
fixing band 44 is passed, are provided.

20 When this portable terminal is worn on the forearm, the display
unit 41 is fixed and worn by winding the fixing band 44, passing through
the holding member 45, around the wrist of the forearm, and the display
screen 42a faces ^{outwardly} the outside. The user operates ^{the terminal} it while watching the
display screen 42a.

When watching the display screen, the user has the arm ^{42a} moved ^{to move} on which the
terminal is worn ^{42a} so that the screen may be almost ^{perpendicular} vertical to a visual axis of the user. If the hand
25 of this arm is ^{being used} working with hand at this time, ^{to perform an operation} the user must be interrupted. Further,
the display screen is not protected from an unexpected external impact.

SUMMARY OF THE INVENTION

A portable terminal has a display screen which ^{can be} ~~is~~ ^{to be} adjusted almost ^{perpendicular} ~~vertical~~ to a visual axis of a user without interrupting ^{an operation being performed by the user} ~~him/her~~ and can be

5 protected from an unexpected external impact ~~is provided~~.

The terminal comprises a display unit having ^a ~~the~~ display screen at the front side, a forearm mounting unit for mounting the display unit on ^a ~~the~~ forearm near ^a ~~the~~ wrist of ^a ~~the~~ user, and a hinge case for rotatably connecting the display unit and forearm mounting unit. The hinge case 10 includes a first rotary mechanism to which the ^{forearm mounting} ~~display~~ unit is rotatably connected, and a second rotary mechanism to which the ^{display} ~~forearm mounting~~ unit is rotatably connected. The first and second rotary mechanisms ^{operate to} turn the display screen to the position nearly ^{perpendicular} ~~vertical~~ to the visual axis of the user, ^{to turn the display screen} and to the position where the screen faces ^{downwardly toward a} ~~down to the forearm~~ side.

15 Thus, the display screen is visible under ^a ~~the~~ condition that the screen is adjusted nearly ^{perpendicular} ~~vertical~~ to the visual ^{axis} ~~screen~~ of the user. When not in use, the display screen is faced ^{downwardly} ~~down~~, so that the display screen ^{is to} ~~may~~

be protected from an unexpected external impact.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a perspective view of a portable terminal wearable on a forearm according to an exemplary embodiment of the present invention.

Fig. 2 is a perspective view showing ^a ~~the~~ state where the portable terminal wearable on the forearm according to the embodiment is 25 operated with a hand.

Fig. 3 is a perspective view showing ^a ~~the~~ state where the display

unit of the portable terminal wearable on the forearm according to the embodiment is not operated.

Fig. 4 is a perspective view of a conventional portable terminal wearable on ^athe forearm.

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DESCRIPTION OF THE PREFERRED EMBODIMENT

An exemplary embodiment of the present invention will be described below while referring to Fig. 1 to Fig. 3.

Fig. 1 is a perspective view of a portable personal computer ^{or} a portable terminal, wearable on a forearm according to an exemplary embodiment of the present invention. Fig. 2 is a perspective view showing ^athe state where the terminal is operated with a hand. Fig. 3 is a perspective view showing ^athe state where a display unit is not operated. A display unit 2 of the portable terminal 1 has a display screen 3 composed of a liquid crystal display device and a touch panel, ^{i.e.} an input device. The unit 2 further incorporates a circuit board (not shown), a wireless module (not shown), an antenna (not shown), and a battery (not shown). A case of the display unit 2 is composed of ^afront cabinet 4 holding the display screen 3, and a back cabinet 5 made of rigid metal material. Reference numeral 6 denotes a hinge case comprising a first rotary mechanism ^{having an axis} 6a, to which the display unit ^{a forearm mounting} 2 is rotatably connected, and a second rotary mechanism ^{having an axis} 6b to which ^{the display} a forearm mounting unit ² 7 is rotatably connected. The forearm mounting unit 7 has a forearm fixing band 8 for fixing the terminal near a wrist of a forearm of ^athe user.

25 In Fig. 2, the portable terminal 1 is worn near the wrist of the forearm ^{via} with the forearm fixing band 8 of the forearm mounting unit 7. First, ^{by} turning the first rotary mechanism 6a, the user moves the hinge

case 6 and display unit 2 to a certain angle with respect to the forearm mounting unit 7, so that ^{an} the x-axis of the display screen 3 of the display unit 2 may become visible. Then, ^{by} turning the second rotary mechanism 6b, the user moves the display unit 2 to a certain angle with respect to the hinge case 6, so that ^a the Y-axis of the display screen 3 may become visible.

^{perpendicular} As a result, the user can observe the display screen 3 adjusted to be nearly vertical ^{relative a} to the visual axis of the user, and continue to operate the terminal ^{while} with watching the display screen, without ^{interrupting an operation being} being interrupted with a operation with a hand. The user can input an operation through the

10 touch panel easily without ~~practically~~ moving the arm on which the portable terminal 1 is worn.

^{To position the display unit as shown in Fig. 3, the} The display unit is not operated in Fig. 3. ^{initially} The user ~~firstly~~ turns the second rotary mechanism 6b, so that the display screen 3 of the display unit 2 ^{becomes positioned} ^{to} positions in parallel with the hinge case 6, and that the display 15 screen 3 ~~may face~~ the forearm mounting unit 7. Then, the user turns the first rotary mechanism 6a, so that the hinge case 6 and display unit 2 ~~may~~ contact the forearm mounting unit 7. At this time, the back cabinet 5 of the display unit 2 faces ^{outwardly} the outside.

20 That is, when the display screen 3 is not operated, the rigid back cabinet 5 of the display unit 2 faces ^{outwardly} the outside, so that the display screen 3 and the internal liquid crystal display device can be protected from an unexpected impact.

According to the embodiment, the back cabinet 5 of the display unit 2 is made of rigid metal, but may be made of reinforced resin.

25 ^{6a} The axis of the first rotary mechanism 6a of the hinge case 6, and ^{6b} the axis of the second rotary mechanism ~~6b~~ cross almost vertically to each other. ^{substantially perpendicularly} Under the condition that ^a the user adjusted the display screen 3

almost ~~vertical~~^{perpendicularly} to the visual ~~line~~^{axis} of the user ~~with respect to~~^{about} the axis of the second rotary mechanism ~~2b~~^{6b}, the user rotates the display unit about the axis of the first rotary mechanism ~~2a~~^{axis}. Thereby, the visual ~~line~~^{axis} of the user does not drift while the display unit 2 is turned right or left.

5 Moreover, since ~~the~~^a wireless module and antenna are incorporated in the display unit, harness from the display unit 2 to ~~the~~^{an} ~~exterior thereof~~^{outside} is not necessary, and ~~the~~ structure of the hinge case is hence simplified. The harness is free from risk of disconnection due to ~~the~~^{rotation} ~~rotating~~.

10 Further, the touch panel, as a pen input device, which is embedded in the display unit 2 enables an input operation on the display screen 3 only around the forearm, and ~~other~~^{another} input device is not needed.

ABSTRACT OF THE DISCLOSURE

- A portable terminal wearable on a forearm ^{includes} is provided in which a display screen ^{that can be perpendicular axis} is adjusted almost vertical to a visual line of a user without ^{to be being perturbed by the hand connected to the forearm} interrupting an operation with a hand, and protected from an unexpected external impact. The portable terminal ^{can be} is worn near the wrist of the forearm ^{via} with a forearm fixing band of a forearm mounting unit. A first rotary mechanism enables ^{an} the x-axis of the display screen of the display unit to be adjusted, so that the screen ^{is} may be visible. ^{Upon operation of the first rotary mechanism,} A hinge case and display unit ^{are} is turned to a certain angle with respect to the forearm mounting unit. Then, a second rotary mechanism enables ^a the y-axis of the display screen to be adjusted, so that the screen ^{is further} may be visible. ^{Upon operation of the second rotary mechanism,} The display unit is turned to a certain angle with respect to the hinge case.